

This listing of claims will replace all prior versions and listings of claims in this application:

## Listing of Claims

1. (Currently amended) A multi fiber optic medical probe, comprising:  
at least two optical fibers;  
side-coupling terminations for the at least two optical fibers; and  
~~at least one or more capillary tubes, the one or more capillary tube having~~  
together tube having at least two bores, ~~the at least two bores~~ being  
adjacent to, have centers that are laterally separated from and not in a  
coaxial arrangement with each other, each of the optical fibers extending  
adjacent to and not in a coaxial arrangement with each other and being  
inserted into a different one of the bores with the ~~at least one or more~~  
capillary ~~tube~~ tubes being at the side-coupling terminations of the at least  
two optical fibers, ~~at least the one more of the~~ capillary ~~tube~~ tubes  
providing beam shaping apertures for controlling light propagating  
between the side-coupling terminations and a region lateral to the probe.
2. (Original) A fiber optic medical probe as claimed in claim 1, wherein the at  
least two optical fibers comprise just two optical fibers.
3. (Original) A fiber optic medical probe as claimed in claim 1, wherein the at  
least two optical fibers comprises eight or more optical fibers.
4. (Original) A fiber optic medical probe as claimed in claim 1, wherein the at  
least two optical fibers comprise at least one single mode fiber and at least one  
multimode fiber.
5. (Original) A fiber optic medical probe as claimed in claim 1, wherein a core  
diameter of at least one of the optical fibers is less than about 10 micrometers and  
a core diameter of at least one other optical fiber of the at least two optical fibers  
is greater than 100 micrometers.

6. (Previously presented) A fiber optic medical probe as claimed in claim 1, wherein the side-coupling terminations comprise angled endfaces for the at least two optical fibers.
7. (Original) A fiber optic medical probe as claimed in claim 6, wherein the angled endfaces are formed by polishing.
8. (Currently amended) A multi fiber optic medical probe, comprising:
  - at least two optical fibers;
  - at least one coreless block to which the optical fibers are coupled adjacent to, separated from and not in a coaxial arrangement with each other, the at least one coreless block comprising side-coupling terminations for the at least two optical fibers and beam shaping apertures for controlling light propagating between the side-coupling terminations and a region adjacent to the probe, wherein the side-coupling terminations are arranged lateral to and not in a coaxial arrangement with each other with respect to an axis of the probe.
9. (Currently amended) A fiber optic medical probe as claimed in claim 8, wherein each of the side-coupling terminations comprises an angled endface of the at least one coreless block.
10. (Original) A fiber optic medical probe as claimed in claim 9, wherein the at least one angled endface is formed by polishing.
11. (Original) A fiber optic medical probe as claimed in claim 9, wherein the at least one angled endface is metal coated.
12. (Original) A fiber optic medical probe as claimed in claim 8, wherein the at least one coreless block is attached to ends of the optical fibers.
13. (Original) A fiber optic medical probe as claimed in claim 8, wherein the at least one coreless block is fused to ends of the optical fibers.

14. (Cancelled)

15. (Previously presented) A fiber optic medical probe as claimed in claim 1, wherein the capillary tube comprises multiple bores, one for each of the at least two optical fibers.

16. (Previously presented) A fiber optic medical probe as claimed in claim 1, further comprising separate capillary tubes over the side-coupling terminations of the at least two optical fibers.

17. (Original) A fiber optic medical probe as claimed in claim 16, wherein the capillary tubes are attached to each other.

18. (Original) A fiber optic medical probe as claimed in claim 16, wherein the capillary tubes are bonded to each other.

19. (Original) A fiber optic medical probe as claimed in claim 16, further comprising a spacer block between the capillary tubes.

20. (Original) A fiber optic medical probe as claimed in claim 16, further comprising a wedge spacer between the capillary tubes for controlling an angle between the optical axes between the beam shaping apertures.

21. (Original) A fiber optic medical probe as claimed in claim 20, wherein the wedge spacer is integral with one of the capillary tubes.

22. (Original) A fiber optic medical probe as claimed in claim 1, wherein the beam shaping apertures are longitudinally offset along an axis of the probe with respect to each other.

23. (Currently amended) A fiber optic medical probe as claimed in claim 1, further comprising at least three optical fibers, wherein one of the optical ~~fiber~~ fibers is single mode fiber and other fibers are multimode fibers.

24. (Currently amended) A method of gathering optical information using a medical probe, comprising:

inserting the medical probe into a body of a patient, and then:

transmitting an optical signal in a first optical fiber;

directing the optical signal to a region lateral to the probe with a side-firing termination for the first optical fiber;

controlling a beam shape of the optical signal with a capillary tube having a first bore in which the side-firing termination is installed, the side-firing termination directing the optical signal to a region lateral to the probe;

collecting optical information with a second optical fiber from a region lateral to the probe, which is inserted into a second bore in the same or a different capillary tube and transmitting the optical information to an analyzer, the first and the second bore being adjacent to and not in a coaxial arrangement with each other and the first optical fiber and the second optical fiber being adjacent to and not in a coaxial arrangement with each other.

25. (Original) A method as claimed in claim 24, wherein the step of collecting optical information comprises collecting the optical information with multiple optical fibers.

26. (Original) A method as claimed in claim 24, wherein the step of transmitting the optical signal in the first optical fiber comprises transmitting the optical signal in single mode fiber.

27. (Original) A method as claimed in claim 24, wherein the step of collecting optical information comprises collecting the optical information with at least one multimode optical fiber.

28. (Currently amended) A multi fiber optic medical probe, comprising:  
at least one single mode optical fiber;  
at least one multimode optical fiber;

side-coupling terminations for the optical fibers;

at least one or more capillary ~~tubes~~, the one or more capillary tube having together tube having at least two bores, the at least two bores being not in a coaxial arrangement with each other, each of the single mode optical fiber and the multimode optical fiber adjacent to and not in a coaxial arrangement with each other and being inserted into a different one of the bores with the ~~at least one~~ or more capillary ~~tube~~ tubes at the side-coupling terminations, wherein the two bores are adjacent to each other and the single mode optical fiber and the multimode optical fiber extend adjacent to each other.

29. (Original) A fiber optic medical probe as claimed in claim 28, wherein the at least two optical fibers comprise just two optical fibers.

30. (Original) A fiber optic medical probe as claimed in claim 28, wherein the at least two optical fibers comprises eight or more optical fibers.

31. (Original) A fiber optic medical probe as claimed in claim 28, wherein a core diameter of the single mode optical fiber is less than about 10 micrometers and a core diameter of the multimode fiber is greater than 100 micrometers.

32. (Previously presented) A fiber optic medical probe as claimed in claim 28, wherein the side-coupling terminations comprise angled endfaces for the at least two optical fibers.

33. (Original) A fiber optic medical probe as claimed in claim 32, wherein the angled endfaces are formed by polishing.

34. (Currently amended) A multi fiber optic medical probe, comprising:  
at least one single mode optical fiber;  
at least one multimode optical fiber;  
at least one coreless block to which the single mode optical fiber and the multimode optical fiber are coupled, the at least one coreless block

providing side-coupling terminations for the single mode optical fiber and the multimode optical fiber, wherein the side-coupling terminations are arranged lateral to, not in a coaxial arrangement with and separated from each other with respect to an axis of the probe and single mode optical fiber and the multimode optical fiber are coupled to the at least one coreless block adjacent to and not in a coaxial arrangement with each other and extend adjacent to each other.

35. (Previously presented) A fiber optic medical probe as claimed in claim 34, wherein the side-coupling terminations comprise an angled endface of the at least one coreless block.

36. (Original) A fiber optic medical probe as claimed in claim 35, wherein the at least one angled endface is formed by polishing.

37. (Original) A fiber optic medical probe as claimed in claim 36, wherein the at least one angled endface is coated.

38. (Original) A fiber optic medical probe as claimed in claim 34, wherein the at least one coreless block is attached to ends of the optical fibers.

39. (Original) A fiber optic medical probe as claimed in claim 34, wherein the at least one coreless block is fused to ends of the optical fibers.

40. (Cancelled)

41. (Previously presented) A fiber optic medical probe as claimed in claim 28, wherein the capillary tube comprises multiple bores for each of the at least two optical fibers.

42. (Previously presented) A fiber optic medical probe as claimed in claim 28, further comprising separate capillary tubes over the side-coupling terminations of the at least two optical fibers.

43. (Original) A fiber optic medical probe as claimed in claim 42, wherein the capillary tubes are attached to each other.
44. (Original) A fiber optic medical probe as claimed in claim 42, wherein the capillary tubes are bonded to each other.
45. (Original) A fiber optic medical probe as claimed in claim 42, further comprising a spacer block between the capillary tubes.
46. (Original) A fiber optic medical probe as claimed in claim 42, further comprising a wedge spacer between the capillary tubes for controlling an angle between the optical axes between the beam shaping apertures.
47. (Original) A fiber optic medical probe as claimed in claim 46, wherein the wedge spacer is integral with one of the capillary tubes.
48. (Previously presented) A fiber optic medical probe as claimed in claim 1, further comprising a catheter head comprising an outer casing containing the side-coupling terminations.
49. (Previously presented) A fiber optic medical probe as claimed in claim 8, further comprising a catheter head comprising an outer casing containing the side-coupling terminations.
50. (Previously presented) A fiber optic medical probe as claimed in claim 28, further comprising a catheter head comprising an outer casing containing the side-coupling terminations.
51. (Previously presented) A fiber optic medical probe as claimed in claim 34, further comprising a catheter head comprising an outer casing containing the side-coupling terminations.

52. (Previously presented) A fiber optic medical probe as claimed in claim 1, further comprising eight optical fibers having corresponding side-coupling terminations directed radially outward from a head of the probe.

53. (Previously presented) A fiber optic medical probe as claimed in claim 28, further comprising eight optical fibers having corresponding side-coupling terminations directed radially outward from a head of the probe.